

REMARKS

35 USC §102

Claims 1, 3-8, 10-15, 27-28 and 37 are rejected under 35 USC §102(e) as being anticipated Kennedy et al. (US 6506497). The Applicant respectfully disagrees.

Claim 1 recites:

"An absorbing composition comprising at least one inorganic-based compound, at least one absorbing compound, and at least one material modification agent, wherein the at least one material modification agent comprises at least one adhesion promoter, at least one crosslinking agent, at least one porogen, at least one catalyst, at least one capping agent, at least one pH tuning agent or a combination thereof, wherein the at least one adhesion promoter comprises APTEOS triflate, APTEOS methanesulfonate, APTEOS nitrate, APTEOS nfbs, ammonium triflate, ammonium nfbs, ammonium methanesulfonate, ammonium nitrate, TMAH triflate, TMAH nfbs, TMAH methanesulfonate, TMAA, TMAN, TMAH nitrate or a combination thereof."

Claim 1, and the related dependent claims, contain the requirement of at least one material modification agent. The current application defines a material modification agent as:

"The at least one material modification agent may include any compound or composition that can modify the coating material to improve the photolithographic, compatibility and/or physical quality of the resulting film or layered material, such as by improving the etch selectivity and/or stripping selectivity, by minimizing the fill bias, by facilitating removal and/or by improving the stability or shelf life of the material/composition. The at least

one material modification agent may comprise at least one adhesion promoter, at least one pH tuning agent, at least one porogen, at least one leveling agent, at least one high-boiling solvent, at least one crosslinking agent, at least one catalyst, at least one capping agent and/or combinations thereof. *Surprisingly, at least in some embodiments, the material modification agent (such as the at least one adhesion promoter) comprises a compound or composition that is conventionally viewed as a poisoning agent for lithography and thus avoided by the industry, but its use in the embodiments described herein improves the adhesion of the lithography composition without poisoning the composition.*" (emphasis added)

The Examiner contends that the Kennedy reference teaches tetramethylammoniumhydroxide (TMAH), and while it is true that the Kennedy reference mentions TMAH – the Examiner is referring to this compound completely out of context. The Kennedy reference states:

"The exposes stack is developed to produce the stack of Fig. 2e. The absorbing SOG ARC layer 24 is resistant to conventional photoresist developer solutions such as a 2.5% solution of tetramethylammoniumhydroxide (TMAH). In contrast, organic ARC layers, which have some of the chemical characteristics of the photoresist materials, are more sensitive to photoresist developers." (emphasis added, see Column 8, lines 4-10)

This statement in Kennedy would appear to support the Applicant's contention that the material modification agent – such as the adhesion promoter – is being utilized in a non-conventional manner over conventional uses described in related references.

In addition, claim 1 recites that the adhesion promoter comprises APTEOS triflate, APTEOS methanesulfonate, APTEOS nitrate, APTEOS nfbs, ammonium triflate,

Honeywell Docket No. H0005567.36146 - 4780
Buchalter Docket No. H9930-0305

ammonium nfbs, ammonium methanesulfonate, ammonium nitrate, TMAH triflate, TMAH nfbs, TMAH methanesulfonate, TMAA, TMAN, TMAH nitrate or a combination thereof. Kennedy does not disclose these compounds alone or in combination with other components, and therefore, Kennedy cannot anticipate the claims of the present application.

Based on this argument, along with others such as that discussed above, Kennedy does not anticipate claim 1 of the present application because Kennedy is missing at least one specific feature or structural recitation found in the present application, and in claim 1. Claim 1 is therefore allowable as not being anticipated by Kennedy. Further, Kennedy does not anticipate claims 3-8, 10-15, 27-28 and 37 by virtue of their dependency on claim 1.

Claims 1, 3-7, 11-13, 18, 26 and 19-31 are rejected under 35 USC §102(e) as being anticipated by US Patent 6677392 (Ravichandran et al). The Applicant respectfully disagrees.

Claim 1 recites:

"An absorbing composition comprising at least one inorganic-based compound, at least one absorbing compound, and at least one material modification agent, wherein the at least one material modification agent comprises at least one adhesion promoter, at least one crosslinking agent, at least one porogen, at least one catalyst, at least one capping agent, at least one pH tuning agent or a combination thereof, wherein the at least one adhesion promoter comprises APTEOS triflate, APTEOS methanesulfonate, APTEOS nitrate, APTEOS nfbs, ammonium triflate, ammonium nfbs, ammonium methanesulfonate, ammonium nitrate, TMAH triflate, TMAH nfbs, TMAH methanesulfonate, TMAA, TMAN, TMAH nitrate or a combination thereof."

Claim 1, and the related dependent claims, contain the requirement of at least one material modification agent. The current application defines a material modification agent as:

"The at least one material modification agent may include any compound or composition that can modify the coating material to improve the photolithographic, compatibility and/or physical quality of the resulting film or layered material, such as by improving the etch selectivity and/or stripping selectivity, by minimizing the fill bias, by facilitating removal and/or by improving the stability or shelf life of the material/composition. The at least one material modification agent may comprise at least one adhesion promoter, at least one pH tuning agent, at least one porogen, at least one

leveling agent, at least one high-boiling solvent, at least one crosslinking agent, at least one catalyst, at least one capping agent and/or combinations thereof. *Surprisingly, at least in some embodiments, the material modification agent (such as the at least one adhesion promoter) comprises a compound or composition that is conventionally viewed as a poisoning agent for lithography and thus avoided by the industry, but its use in the embodiments described herein improves the adhesion of the lithography composition without poisoning the composition.*" (emphasis added)

The Examiner contends that Ravichandran's mention of some silanes for use as adhesion promoters anticipates claim 1 of the present application. This contention could not be more incorrect, especially based on the fact that the Examiner points to claim 31 as a basis for this contention. Claim 31 is dependent on claim 1 and states: "wherein the adhesion promoter further comprises a polydimethylsiloxane-based material, an alkoxy or hydroxy-containing silane monomer, a vinyl-containing silane monomer, an acrylated silane monomer or a silyl hydride compound." There is absolutely nothing in Ravichandran that points to the use of APTEOS triflate, APTEOS methanesulfonate, APTEOS nitrate, APTEOS nfbs, ammonium triflate, ammonium nfbs, ammonium methanesulfonate, ammonium nitrate, TMAH triflate, TMAH nfbs, TMAH methanesulfonate, TMAA, TMAN, TMAH nitrate or a combination thereof as an adhesion promoter.

In addition, Ravichandran does not teach all of the claimed elements of the present application. "Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W. L. Gore & Assocs. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303, 313 (Fed. Cir. 1983) (citing *Soundscriber Corp. v. United States*, 360 F.2d 954, 148 USPQ 298, 301 (Ct. Cl.), adopted, 149 USPQ 640 (Ct. Cl. 1966)) Further, the prior art reference must disclose each element of the claimed invention "arranged as in the claim". *Lindermann Maschinenfabrik GmbH v. American Hoist &*

Honeywell Docket No. H0005567.36146 - 4780
Buchalter Docket No. H9930-0305

Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984)(citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)). Ravichandran does not teach the addition of at least one material modification agent, wherein the at least one material modification agent comprises at least one adhesion promoter, at least one crosslinking agent, at least one porogen, at least one catalyst, at least one capping agent, at least one pH tuning agent or a combination thereof, wherein the adhesion promoter comprises APTEOS triflate, APTEOS methanesulfonate, APTEOS nitrate, APTEOS nfbs, ammonium triflate, ammonium nfbs, ammonium methanesulfonate, ammonium nitrate, TMAH triflate, TMAH nfbs, TMAH methanesulfonate, TMAA, TMAN, TMAH nitrate or a combination thereof. Ravichandran does not disclose these compounds alone or in combination with other components, and therefore, Ravichandran cannot anticipate the claims of the present application.. Second, Ravichandran does not teach the addition of at least one material modification agent wherein at least one of those agents may conventionally considered a poisoning agent in the field of lithography. Based on this argument, along with others such as that discussed above, Ravichandran does not anticipate claim 1 of the present application because Ravichandran is lacking and/or missing at least one specific feature or structural recitation found in the present application, and in claim 1. Claim 1 is therefore allowable as not being anticipated by Ravichandran. Further, Ravichandran does not anticipate claims 3, 7, 11-13, 18, 26 and 29-31 by virtue of their dependency on claim 1.

35 USC §103

Claims 1 and 37 are rejected under 35 USC §103(a) as being obvious over Kennedy et al. (US 6506497) in view of Dammel et al. (US Publication No.: 2004/0166434). The Applicant respectfully disagrees.

Claim 1 recites:

"An absorbing composition comprising at least one inorganic-based compound, at least one absorbing compound, and at least one material modification agent, wherein the at least one material modification agent comprises at least one adhesion promoter, at least one crosslinking agent, at least one porogen, at least one catalyst, at least one capping agent, at least one pH tuning agent or a combination thereof, wherein the at least one adhesion promoter comprises APTEOS triflate, APTEOS methanesulfonate, APTEOS nitrate, APTEOS nfbs, ammonium triflate, ammonium nfbs, ammonium methanesulfonate, ammonium nitrate, TMAH triflate, TMAH nfbs, TMAH methanesulfonate, TMAA, TMAN, TMAH nitrate or a combination thereof."

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one material modification agent may comprise at least one adhesion promoter, at least one pH tuning agent, at least one porogen, at least one leveling agent, at least one high-boiling solvent, at least one crosslinking agent, at least one catalyst, at least one capping agent and/or combinations thereof. *Surprisingly, at least in some embodiments, the material modification agent (such as the at least one adhesion promoter) comprises a compound or composition that is conventionally viewed as a poisoning agent for lithography and thus avoided by the industry, but its use in the embodiments described herein improves the adhesion of the lithography composition without poisoning the composition.*" (emphasis added)

The Examiner contends that the Kennedy reference teaches tetramethylammoniumhydroxide (TMAH), and while it is true that the Kennedy reference mentions TMAH – the Examiner is referring to this compound completely out of context. The Kennedy reference states:

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Honeywell Docket No. H0005567.36146 - 4780
Buchalter Docket No. H9930-0305

ammonium nfbs, ammonium methanesulfonate, ammonium nitrate, TMAH triflate, TMAH nfbs, TMAH methanesulfonate, TMAA, TMAN, TMAH nitrate or a combination thereof. Kennedy does not disclose these compounds alone or in combination with other components, and therefore, Kennedy cannot anticipate the claims of the present application.

The Examiner also appears to be confusing catalysts with adhesion promoters. The Examiner begins the discussion by mentioning the reference to TMAH in the Kennedy reference, which is clearly out of place, and then makes a leap of faith to state that one of ordinary skill in the art would read Kennedy and see TMAA mentioned in Dammel and automatically arrive at claim 1. This contention is just not true. First, the reference to TMAH in Kennedy is out of line with the Examiner's argument and would not lead one of ordinary skill in the art to conclude that this compound should be added to compositions being prepared. Second, the leap to conclude that Kennedy and Dammel should be combined on this basis is not appropriate. It appears as though the Examiner is trying to piece together the claims by finding key words in certain references, but not focusing on their meaning within the context of the reference. The Applicant respectfully requests that the Examiner reconsider this rejection and move this case to allowance.

Claim 1 is therefore allowable as not being obvious in view of Kennedy and Dammel. Further, claim 37 is not obvious in view of Kennedy and Dammel by virtue of their dependence on claim 1.

Honeywell Docket No. H0005567.36146 - 4780
Buchalter Docket No. H9930-0305

REQUEST FOR ALLOWANCE

Claims 1, 3-15, 18, 26-31 and 37 are pending in this application. The applicants request allowance of all pending claims.

Respectfully submitted,

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